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Title : FEM ANALYSIS OF LTA-7 HORIZONTAL TAIL

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Abstract :

A finite element structural analysis of the stabilizer portion of the horizontal tail has been performed using the MSC/NASTRAN package. The critical loading case is identified by subjecting the structure to loading corresponding to several different load cases. From NASTRAN stress output for these cases, the Va maneuvering 5700 kg., n = 1.0, 0.2412$\bar{c}$, elevator up deflection is seen to be critical. Stresses from this case are used to compute the margins in buckling for skin panels and shear webs. It is seen that stresses are within allowable limits but from the buckling point of view, while the skin panels are over-designed, the midspar web is under-designed and must be stiffened. Comparisons with the stress analysis results from the simple bending theory/shear flow analysis carried out by the ASDE/CAU design group show that there is scope for improvement in the design.